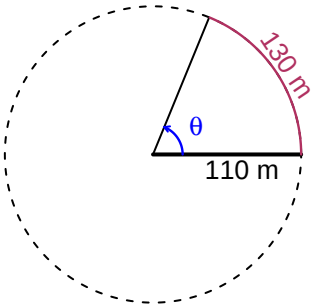
Name: Date:

Trig Final (Practice v27)

- You should have a calculator (like Desmos) and a unit-circle reference sheet.

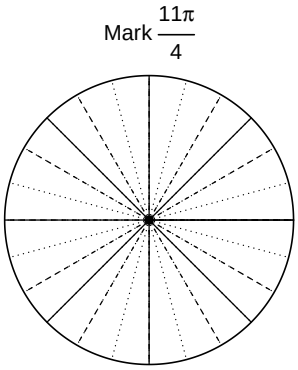
Question 1

In the figure below, we see a circle and a central angle that subtends an arc. The radius is 110 meters. The arc length is 130 meters. What is the angle measure in radians?

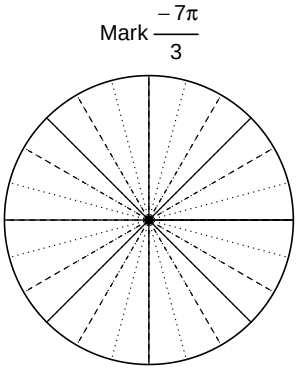


Question 2

Consider angles $\frac{11\pi}{4}$ and $\frac{-7\pi}{3}$. For each angle, use a spiral with an arrow head to **mark** the angle on a circle below in standard position. Then, find **exact** expressions for $\sin\left(\frac{11\pi}{4}\right)$ and $\cos\left(\frac{-7\pi}{3}\right)$ by using a unit circle (provided separately).



Find $\sin(11\pi/4)$



Find $\cos(-7\pi/3)$

Question 3

If $\tan(\theta) = \frac{-12}{5}$, and θ is in quadrant II, determine an exact value for $\cos(\theta)$.

Question 4

A mass-spring system oscillates vertically with an amplitude of 4.89 meters, a frequency of 8.59 Hz, and a midline at $y = -2.75$ meters. At $t = 0$, the mass is at the maximum height. Write an equation to model the height (y in meters) as a function of time (t in seconds).